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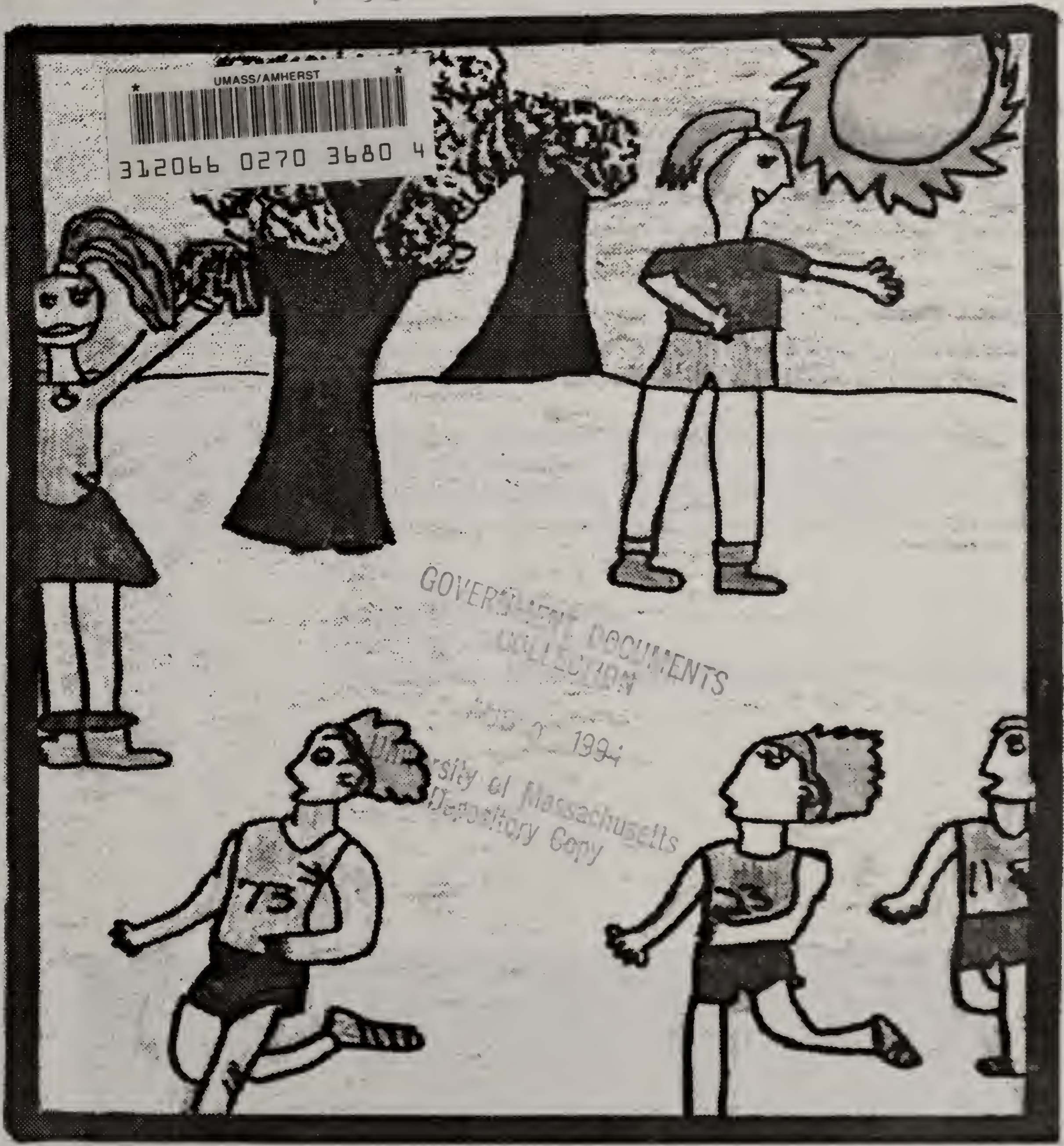

Casey Thayer, Medway Middle School, Medway

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# FIT PLAN FOR YOUTH

Wayne L. Westcott, Ph.D.

Massachusetts Governor's Committee on Physical Fitness and Sports
Youth Fitness Subcommittee

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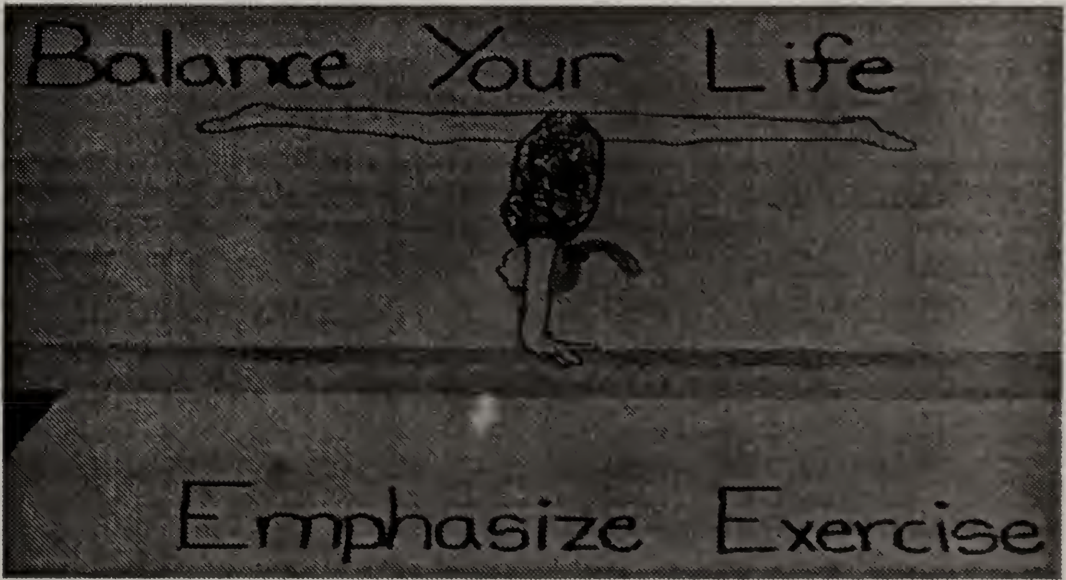
# FORWARD

The Fit Plan For Youth by Wayne L. Westcott, Ph.D. has been written especially for parents and teachers. It is a publication of the Youth Fitness Subcommittee of the Massachusetts Governor's Committee on Physical Fitness and Sports. Dr. Westcott is a Strength Training Consultant for the National YMCA of the USA, the American Council on Exercise, the National Academy of Sports Medicine, and the National Youth Sports Foundation For The Prevention Of Athletic Injuries.

The illustrations in this publication were selected from entries in the "What I Do To Get Fit Art Contest", a statewide program for fifth graders jointly sponsored by the Massachusetts Department of Education and the Youth Fitness Subcommittee of the Massachusetts Governor's Committee on Physical Fitness and Sports.

Special thanks to Susan Farb of the Department of Education for her efforts in co-ordinating this project and to subcommittee members Wayne Westcott, John Morgan, Claire Cook, Jackie Weston, Brian Wessner, Ed Carp, Normandie Nigh and Carol Mansour. In addition, our congratulations to all the schools and children who participated in the contest. Their pictures were outstanding and portrayed many different activities they enjoyed to get fit.

Rita Glassman, Chairperson
Youth Fitness Subcommittee
Massachusetts Governor's Committee on Physical Fitness and Sports



Melissa Hershey, John Eliot School, Needham

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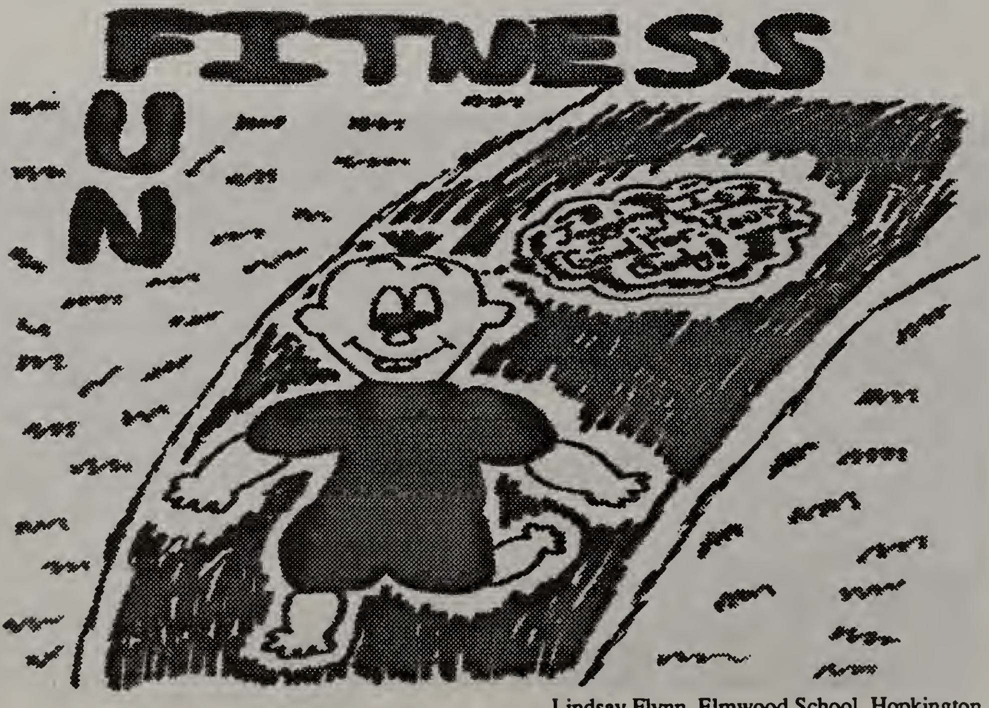


Lindsay Flynn, Elmwood School, Hopkington

# FIT PLAN FOR YOUTH

In our sedentary society, it is difficult to achieve physical fitness through our daily lifestyle. Even children spend much of their time sitting in school rooms, living rooms and automobiles. In fact, you may want to note how many hours your child spends sitting during a typical day. Be sure to include time on the school bus, in the classroom, in music lessons, watching television, utilizing computers, playing table games and reading. Hours sitting: ________

Jason Michniewicz
Brewster Elementary School, Brewster

Contrast this to the number of hours your child spends performing vigorous physical activity. Include physical education classes and sports participation, but remember that few schools offer daily physical education and few athletic events provide comprehensive physical conditioning. Hours doing physical activity: ________

The general lack of vigorous physical activity among youth,necessitates a "Fit Plan" to foster the development of cardiovascular endurance, joint flexibility and muscular strength/endurance. While the specific activities may vary according to personal preferences, the same basic conditioning principles should be applied to all exercise programs.

## Assessing Fitness In Youth

Before beginning a fitness program, it is advisable to assess your child's present abilities in the areas of cardiovascular endurance, joint flexibility and muscular strength/endurance. This allows for periodic reassessment to identify improvement and enhance motivation. Any child who has a pre-existing medical condition should see a physician before starting an exercise program.

The following fitness evaluation protocols are taken from the American Alliance of Health, Physical Education, Recreation and Dance's Physical Best booklet. These tests are easy to administer and score.

Tables 1 and 2 present the health/fitness standards for boys and girls between 5 and 18 years of age. However, it should be emphasized that individual improvement is more important than attaining a specific test score. The key to better fitness and a physically active lifestyle is personal satisfaction with both the process and the product of regular exercise.

# PHYSICAL BEST FITNESS EVALUATION TECHNIQUES

Rory McIntyre, Medway Middle School, Medway

## Cardiovascular Endurance

Test Item: One Mile Walk/Run

Test Objective: To walk or run one mile in the fastest time possible.

Instructions: Students are instructed to run one mile in the fastest possible time. Emphasis should be placed on the development of the fastest pace that can be sustained for the mile distance. Participants should always warm up, and should be encouraged to practice walking or running the required distance prior to the official day of the test.

As the students cross the finish line, elapsed time should be called to the participants (or their partners). Walking is permitted, but since the objective is to cover the distance in the shortest possible time, students should be encouraged to run as much as possible for the one mile distance.

Test Area: The one mile run can be conducted on a track or on any other flat, measured area.

Equipment: Stopwatch, scorecards and pencils.

Distance: __________

Time: __________

Jeff Becker, Medway Middle School, Medway

## Joint Flexibility

Test Item: Sit and Reach

Test Objective: To evaluate the flexibility of the lower back and hamstring muscles.

Instructions: Students should stretch the low back and hamstrings prior to testing. The warm-up should include slow, sustained, steady (no bobbing) stretching of the low back and hamstring muscles.

Have students remove shoes and be seated at the test apparatus with their knees straight in front of them; the heels should be approximately shoulder-width apart and the feet flat against the end board. Have the students lean forward extending the fingertips, palms down and hands together, as far forward along the ruler as possible. Each student is allowed four tries.

Equipment: Sit and Reach Box, a specially-constructed box with a measuring scale where 23 cm is at the level of the feet. (You may substitute a milk crate and a yard stick to measure the cm.)

Scoring: The score is the most distant point reached on the fourth trial by both hands and held for one second. Measure to the nearest centimeter. The trial should be considered invalid and readministered if the knees fail to remain straight, or if the hands reach unevenly.

Score: __________

Megan Schmidt
Brewster Elementary School, Brewster

## Muscular Strength/Endurance

Test Item: Modified Sit-Ups

Test Objective: To evaluate abdominal muscular strength/endurance.

Instructions: Students are instructed to lie on their back with knees bent, feet on floor, and heels between 12 and 18 inches from the buttocks. The arms are crossed on the chest with the hands on the opposite shoulders. The feet are held on the floor by a partner. On the command "ready-go," the student curls to a sitting position until the elbows touch the thighs. The arms maintain contact with the chest throughout the motion. The student then returns to the starting position with the midback making contact with the floor. Students are encouraged to repeat a correctly performed sit-up as many times as possible in the one-minute time limit. Rest between sit-ups is allowed in either the up or down position.

Test Area: Mats or other comfortable surfaces are recommended although any area with sufficiency may be used.

Equipment: Stopwatch and mats.

Scoring: Record the number of correctly-executed sit-ups that are complete in 60 seconds.

Number of sit-ups: __________

## Table 1
## Health Fitness Standards

### BOYS

| Age | One Mile Walk/Run (minutes) | Sit & Reach (cm) | Modified Sit-Ups |
|---|---|---|---|
| 5 | 13:00 | 25 | 20 |
| 6 | 12:00 | 25 | 20 |
| 7 | 11:00 | 25 | 24 |
| 8 | 10:00 | 25 | 26 |
| 9 | 10:00 | 25 | 30 |
| 10 | 9:30 | 25 | 34 |
| 11 | 9:00 | 25 | 36 |
| 12 | 9:00 | 25 | 38 |
| 13 | 8:00 | 25 | 40 |
| 14 | 7:45 | 25 | 40 |
| 15 | 7:30 | 25 | 42 |
| 16 | 7:30 | 25 | 44 |
| 17 | 7:30 | 25 | 44 |
| 18 | 7:30 | 25 | 44 |

Amy Eastman, Halifax Elementary School, Pembroke

## Table 2
## Health Fitness Standards

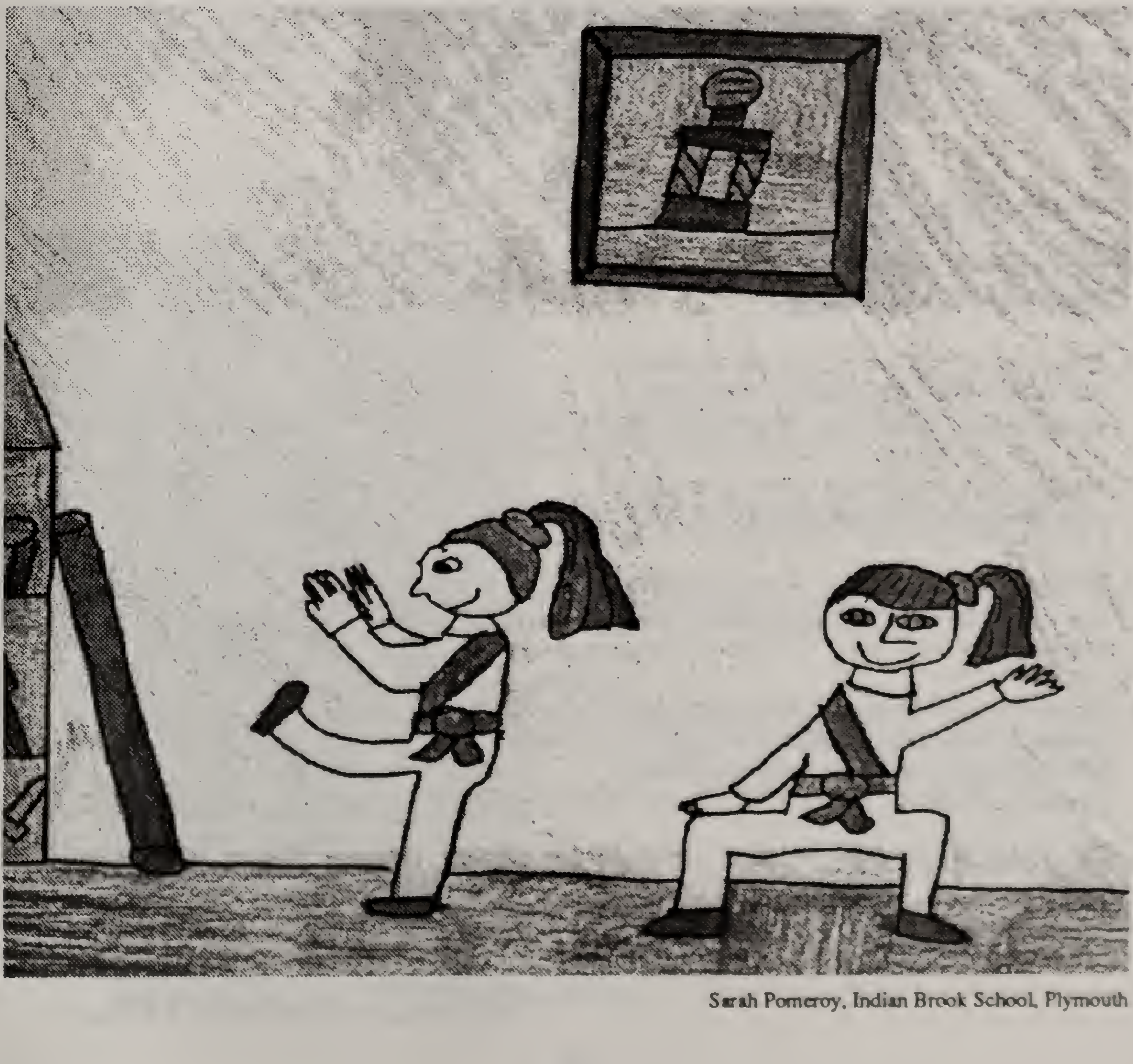
### Girls

| Age | One Mile Walk/Run (minutes) | Sit & Reach (cm) | Modified Sit-Ups |
|---|---|---|---|
| 5 | 14:00 | 25 | 20 |
| 6 | 13:00 | 25 | 20 |
| 7 | 12:00 | 25 | 24 |
| 8 | 11:30 | 25 | 26 |
| 9 | 11:00 | 25 | 28 |
| 10 | 11:00 | 25 | 30 |
| 11 | 11:00 | 25 | 33 |
| 12 | 11:00 | 25 | 33 |
| 13 | 8:00 | 25 | 33 |
| 14 | 7:45 | 25 | 35 |
| 15 | 7:30 | 25 | 35 |
| 16 | 7:30 | 25 | 35 |
| 17 | 7:30 | 25 | 35 |
| 18 | 7:30 | 25 | 35 |

Amy O'Brien, William H. Taylor School, New Bedford

# Guidelines For Youth Fitness Development

Now that you have determined your child's fitness levels, you can work together to provide a safe and effective means for improvement. The following guidelines for developing higher levels of muscular strength, cardiovascular endurance and joint flexibility are well-suited to boys and girls between 8 and 15 years of age.



Sarah Pomeroy, Indian Brook School, Plymouth

# Guidelines for Youth Strength Development *

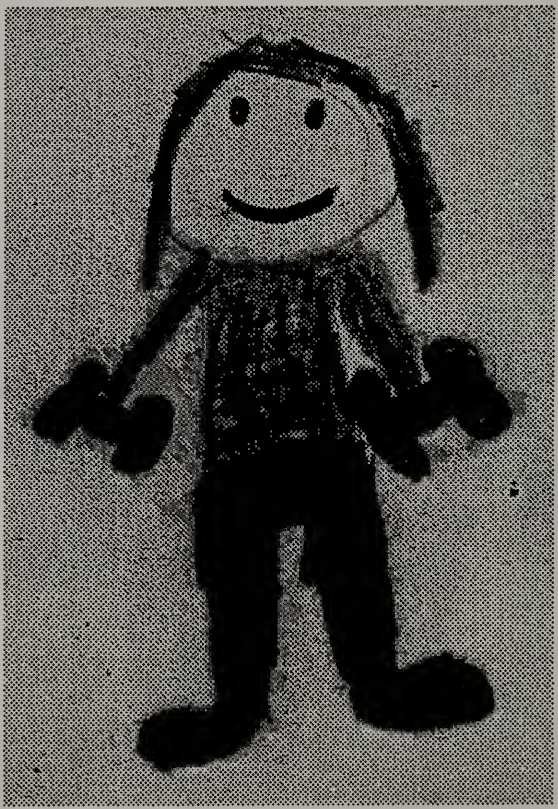
Muscular strength is very important for boys and girls. To begin, our muscles function as the engines of our bodies, producing movement and power for athletic activities. Our muscles also serve as the shock absorbers of our bodies, thereby playing a major role in injury prevention. Also, strong muscles are closely related to strong tendons, ligaments and bones.

It should never be assumed that children will increase muscle strength through their sports participation. Rather, coaches should ensure that each player develops sufficient muscle strength prior to the competitive season. This may be safely accomplished through the use calisthenics, rubber tubing, free weights or resistance machines, as long at the training stimulus is increased gradually and progressively.

Calisthenics, such as push-ups, pull-ups, sit-ups and bench dips are the easiest form of muscle conditioning. Although exercises performed with bodyweight permit additional repetitions, they do not allow for systematic increases in resistance which is the key to strength development.

Free weights (barbells, dumbbells) and resistance machines (Universal Gym, Heartline, Nautilus) provide adjustable weightloads and a wide variety of exercise movements. However this equipment should be used only under the direction of trained (certified) strength instructors in accordance with the following guidelines established by the American Orthopaedic Society for Sports Medicine (1985).

1. A preparticipation physical exam is mandatory.
2. The child must have the emotional maturity to accept coaching and instruction.
3. There must be adequate supervision by coaches who are knowledgeable about strength training and the special problems of prepubescents.
4. Strength training should be a part of an overall program designed to increase physical fitness.
5. Strength training should be preceded by warm-up exercises and followed by cool-down exercise.
6. Emphasis should be on controlled lifting and lowering movements through a full range of joint motion, but avoiding a lockout position in pressing movements.
7. Competition is prohibited.
8. No maximum lift should ever be attempted.



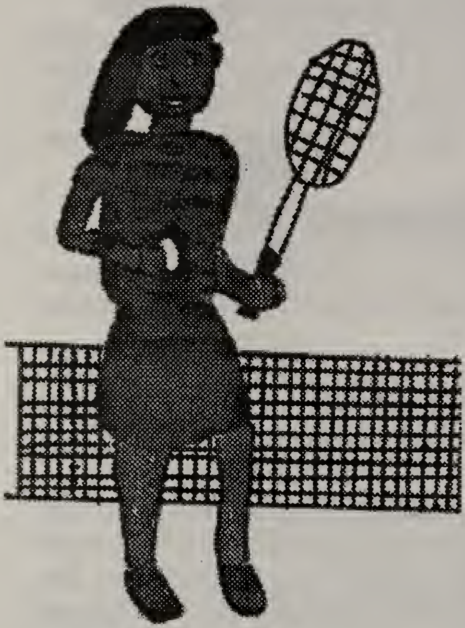
Maggie Palleschi
Weymouth South Intermediate School, S Weymouth

The following recommendations for a safe, effective and efficient youth strength training program are taken from the college textbook, Strength Fitness: Physiological Principles and Training Techniques (1991).

Jeffrey Lane, J.F. Kennedy School, Franklin

1. Warm-Up and Cool-Down: Begin and end each session with some moderate activity such as stationary cycling, bodyweight exercises and stretching to serve as a transition to and from the strength exercise.
2. Exercise Selection: Perform exercises that involve the front thighs, rear thighs, lower back, abdominals, chest, upper back, shoulders, front arms, rear arms, front neck, rear neck, lower legs and forearms.
3. Exercise Sequence: Generally perform the exercises for the lower body prior to the exercises for the upper body, moving from larger to smaller muscles groups.
4. Exercise Speed: Execute all strength training movements in a slow and controlled manner, with strict adherence to proper exercise technique.
5. Exercise Sets: Complete 1 properly performed set of each strength training exercise.
6. Exercise Repetitions: Each exercise set should consist of no less than 8 and no more than 12 repetitions.
7. Exercise Resistance: The resistance should be sufficient to produce muscle fatigue within 8-12 repetitions.
8. Exercise Range: Each exercise movement should encompass a comfortable range of joint movement.
9. Exercise Progression: The training resistance should be increased by no more than 5 percent (1-5 pounds) whenever 12 strict repetitions can be completed.
10. Exercise Frequency: Strength training should be performed 2 or 3 equally spaced days per week for approximately 15-20 minutes per session.

# Guidelines For Youth Endurance Development*



Joey Zugale
Halifax Elementary School, Pembroke

Cardiovascular endurance is a critical factor in health and fitness for persons of all ages, and should be included in youth sports programs. Our cardiorespiratory system includes the cardiovascular system (heart and blood vessels), and respiratory system (lungs), and functions as the fuel pump of our bodies. That is, the cardiovascular system is responsible for delivering oxygen and energy to all areas of the body. Our ability to perform prolonged physical activity is directly related to the fitness level of our cardiovascular system.

Cardiovascular conditioning is obviously important for participation in aerobic activities such as soccer, basketball and swimming, and should be an integral part of each practice session. Although not essential for performing well in football, baseball, and other stop-and-go sports, some endurance training should be included in these practice sessions as well.

In addition to training consistency, there are two key requisites for endurance development. First, the exercise must be vigorous enough to raise the heart rate above 50 percent of maximum. For most young people this corresponds to about 120-160 heart beats per minute. Second, the exercise must be performed long enough to stimulate beneficial cardiovascular adaptations. Fifteen to twenty minutes of endurance exercise is usually considered the minimum training duration for boys and girls.

Consider the following guidelines for developing cardiovascular endurance in a safe and sensible manner:

1. Warm-Up: Precede each endurance exercise session with a few minutes of warmup activity such as brisk walking, bodyweight exercises and stretching.
2. Activity Selection: Try to incorporate a variety of large muscle activities such as jogging, interval running, cycling, short-rest relays, rope jumping, and games that involve continuous movement.
3. Initial Conditioning Phase: Begin endurance workouts with a relatively slow pace for a short period of time (5 minutes).
4. Progression Principle: Gradually increase the training duration as the young participants' endurance fitness improves.
5. Maintenance Phase: Perform 15-20 minutes of endurance exercise at least twice a week, working at about three-quarters effort (70-80 percent of maximum heart rate).
6. Cool-Down: Follow each endurance exercise session with a few minutes of cool-down activities such as walking and stretching.
7. Positive Attitude: Be sure to present a positive and supportive attitude towards endurance training as it is important for youth to establish cardiovascular conditioning habits.

# Guidelines For Youth Flexibility Development*

Shannon Smith, Medway Middle School, Medway

Flexibility refers to the range of movement in our joints. Flexibility frequently varies from joint to joint. Lack of flexibility is most often attributed to tight muscles, and can be a contributing factor to many sports injuries.

Although children are typically more flexible than adolescents and adults, there is usually some room for improvement. Stretching may be perceived as monotonous and unnecessary by some youth sports participants. However, it is particularly important in growing adolescents, because they experience decreases in flexibility during rapid growth periods.

Flexibility is specific to each joint movement, making it advisable to address the major muscle groups in a sequence of stretching exercises. A basic flexibility session should include stretches for the muscles of the neck, shoulder, upper torso, midsection and low back, front thigh, rear thigh, inner thigh and lower leg.

Flexibility exercises are designed to increase the range of joint movements by gently and progressively stretching the surrounding muscles. In order to reduce muscle tension and relax the muscle fibers it is necessary to perform each stretch slowly, without bouncing or ballistic movements that actually cause the muscles to contract in a protective manner. Whenever possible, the fully stretched position should be held for about 60 seconds, thereby allowing the muscle fibers time to adapt to their stretched position.

For example, an excellent exercise to stretch the muscles of the calves, rear thighs and low back is known as the Figure Four Stretch. This exercise is performed by sitting with the right leg extended and the left leg bent so that the left foot touches the right inner thigh. Reach the right hand towards the right foot, grasping either the ankle or the toes. Hold this stretched position for 30 seconds, relax momentarily and repeat The second time, it should be possible to reach a little further as the calf, rear thigh and low back muscles become more relaxed. Switch leg positions and perform the same stretching sequence with the left leg and hand.

Although some stretches, such as rotational exercises, may involve continuous movement they should be performed very slowly for maximum safety and effectiveness. Fast stretching movements are counterproductive and dangerous, and should be avoided at all costs.

Recent research indicates that stretching exercises may be performed before practice or after practice with equal benefit. It may be a good ideal to include a few stretching exercises during both the before-practice warm-up and the after-practice cool-down.

## Recommendation

Physical fitness contributes to physical and mental well-being and is important for everyone. The benefits of good physical fitness allow children and adolescents to enjoy an active lifestyle. We encourage you to emphasize regular exercise in your family and to encourage and assist your children in achieving a high level of physical conditioning. You will all enjoy the process and be pleased with the results.

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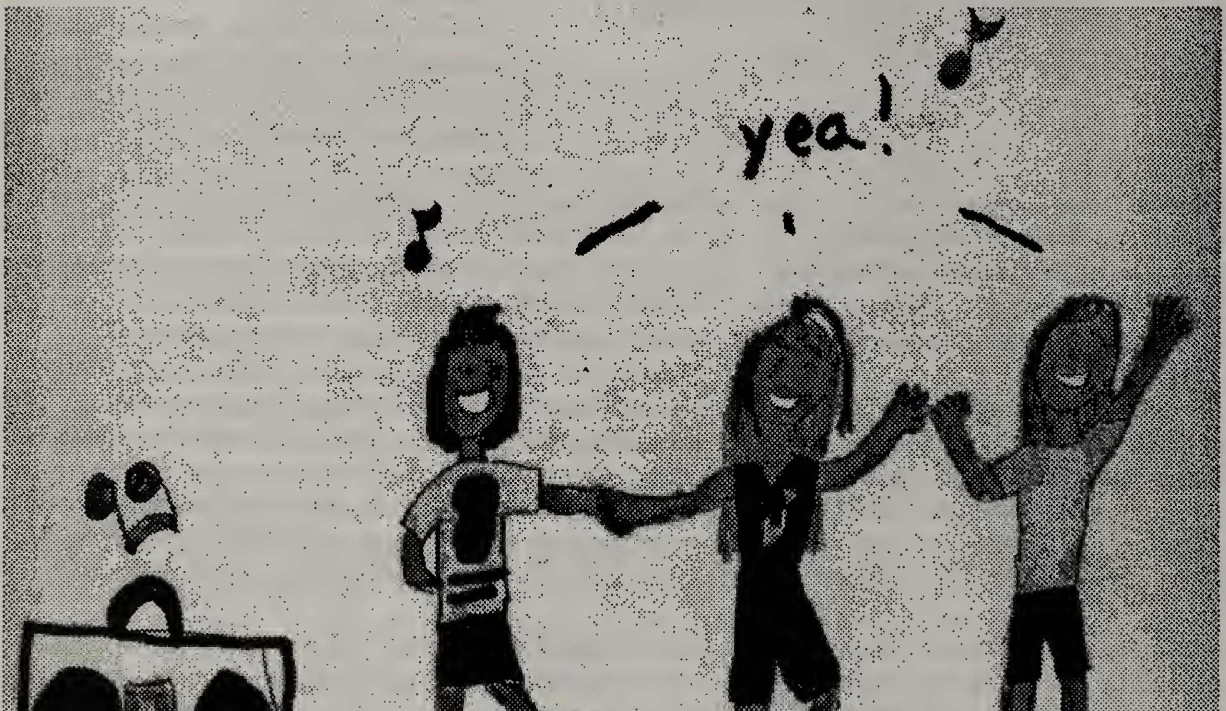
* The sections on Youth Strength Development, Youth Endurance Development and Youth Flexibility Development have been reprinted by permission of the National Youth Sports Foundation For The Prevention Of Athletic Injuries.



Laura Frado, South Intermediate School, S Weymouth

For more information about the Massachusetts Governor's Committee on Physical Fitness and Sports contact Lyle J. Micheli, M.D., Chairperson, at The Children's Hospital, Department of Orthopaedics, 300 Longwood Avenue, Boston, MA 02215, 617-735-6934.

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